The role of Infection Control Nurse in Prevention of Surgical Site Infection (SSI)

April 2013
Impact of SSI

- 2nd common health-care associated infection (HCAI)
- 14-16% of HCAI
- Post operation SSI prolong extra length of stay in hospital of 7.3 days in average and extra cost of US$ 3,100
- Burden on patient and their family

Surgical Site Infections, Current Treatment Options in Infectious Diseases 2000, 2:347-358
CATS Decrease Surgical Site Infections

Hair Removal:
If hair must be removed from the surgical site, clippers are the best option. Never use a razor.

Prophylactic Antibiotics:
Antibiotics consistent with national guidelines should be administered within 1 hour of incision time and discontinued within 24 hours, in most cases.

Normothermia:
Colorectal surgery patients should be normothermic (96.8-100.4°F) within the first hour after surgery.

Glucose Control:
Cardiac surgery patients should have controlled 6 a.m. serum glucose (5.200 mg/dL) on postoperative Day 1 and Day 2.

Additional information about reducing surgical site infections is available at www.medqic.org.

Clippers
Antibiotics
Temperature
Sugar

HSAG HEALTH SERVICES ADVISORY GROUP
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Care Bundle

Pre-operation

Post operation
Prevention of SSI (pre-op)

- Patient education
- Patient personal hygiene
- Eradicate or control infection
- Decolonization for MRSA carrier
- Control blood glucose level
- Minimize LOS
- Not to removal hair unless interferes with OT
- Antimicrobial prophylaxis
一. 手術前預備
如有吸煙習慣，應盡早戒煙
控制體重，保持良好飲食習慣
糖尿病人應盡量保持正常血糖水平

二. 手術後護理
傷口會被敷料及膠布覆蓋，有時亦可能附有膠管用以引流傷口滲液；
活動時應避免牽拉傷口及引流管；
護士會因應需要，為你的傷口更換敷料。
保持良好個人衛生，
手術前請先沐浴，但切勿使用剃刀剃毛
Pre-operative patient care

- Not recommended
- Hair removal if essential – use clippers
- Never use razor because the microscopic cuts will serve as the foci for bacterial multiplication
- Clipping hair immediately before an operation has been associated with a lower risk of SSI than clipping the night before the operation (SSI immediately before = 1.8% vs night before = 4%)

Guideline For Prevention Of Surgical Site Infection, 1999 Infection Control and Hospital Epidemiology
Bathing

- Patient general hygiene
- Hibiscrub bath x 2 times before OT if indicated
Blood Glucose control

- The aim is to maintain serum glucose Less than 11.1 mmol/l

- Insulin infusions were continued for 48 hours postoperatively, after which the patients were placed on their preoperative diabetic regime

Continuous Insulin Infusion Reduces Infectious Complications in Diabetics Following Coronary Surgery
Skin preparation

- Choice of skin disinfectants – controversial
- 2% alcoholic chlorhexidine *
- The skin antiseptic solutions should be applied in concentric circle with friction from inside to outside

* New England Journal
Prevention of SSI (intra-op)

- Antimicrobial Prophylaxis: within 30-60 min
- Re-dosing is required if pro-long OT or significant blood loss (>1500ml)
- Intraoperative: every 3 hours (half life of cefuroxime is 1.5 hours; i.e 2 times the half life of antibiotics)
- Maintain normothermia perioperatively
  - core temperature of 36-38°C
Surgical hand scrub

- Hibiscrub / Povidone Iodine
  - Timing: at least 2 minutes
  - Poster & reminder
  - Timer
  - Education
  - Regular audit
Recommendation of proper Surgical Hand Antisepsis Technique

1. Remove all jewelry and watches from hands & wrist

2. General hand wash with antimicrobial agent under running water

3. 1st case of the day - clean subungual area with nail cleaner/ nail brush for (Optional)

4. Apply antimicrobial agent and scrub with circular motion for at least 2 mins (from hands to elbow)

5. Hands should be kept higher than elbows all the times

6. Rinse under running water from finger tips to elbows in one direction

7. Use elbows to turn off the taps

8. Pat dry each hand & arm by using a different side of the sterile towel

References:
Standard Recommended Practices and Guidelines, ARON 2007
Guideline for hand hygiene in health-care settings, CDC 2002
Prevention of SSI (intra-op)

- OT environment:
  - Positive pressure
  - 99.97 HEPA air
  - 15 ACH at least 3 ACH from should be fresh air
  - Temp: 20-23°C, RH: 30-60%
  - Regular maintenance and monitoring

- Sterilization of instrument
  - 121°C x 15 min
  - 134°C x 3 min
SSI prevention - Post operation

- Antimicrobial Prophylaxis: given not more than 24 hours

- Wound care
  - Wound dressing
  - HH
三．出院後的護理
保持傷口乾爽，勿自行塗抹藥膏。
不要用手觸摸未痊癒的傷口。
若需處理傷口，應在處理前後清潔雙手。
避免穿著過緊衣服及搬動重物，以防影響或
拉傷傷口。
若傷口被沾濕，應盡快往普通科門診洗傷口
和更換敷料。
應參照醫護人員在出院時之指導，
並按照日期往普通科門診拆除縫線。
需注意傷口情況，如遇有：紅腫、痛楚加劇、
流血水、流膿、發熱等徵狀，需立即求診。
如有任何問題，可向醫護人員查詢。

祝早日康復

外科手術
傷口護理小貼士

雖然大多數病人手術後的傷口都會癒合良好，但仍有少部份病人的
傷口會出現感染（傷口發炎）的併
發症。
其實，你的參予可以協助減低
手術後傷口感染的機會。

沙田威爾斯親王醫院
KPI – SSI monitoring

- 10 Core – surgery
  - Appendectomy
  - Colon surgery
  - Rectal surgery
  - Gall bladder surgery
  - Hernia operation
  - Knee replacement
  - Laminectomy
  - DHS/ AMA
  - Breast surgery
  - Thyroid surgery
SSI surveillance

- Review OT record
- Review antibiotic prophylaxis compliance
- Post discharge follow up (phone and case notes review)
- Report (surgeon hidden code, team infection rate)
Criteria for defining SSI (NHSN)

Basic criteria:

- Occur within 30 days, implant - 1 year AND at least one of the followings:
  - Presence of purulent discharge or
  - Organisms isolated from aseptically obtained culture of fluid or tissues or Symptoms: pain or tenderness or redness or swelling and the incision is deliberately opened by surgeons or
  - Diagnosis by a surgeon or attending physician
Sites of SSI – Superficial, Deep and Organ/Space

**FIGURE.** Cross-section of abdominal wall depicting CDC classifications of surgical site infection.22
## Wound class

<table>
<thead>
<tr>
<th>Types of wound</th>
<th>Clean wound</th>
<th>Clean Contaminated wound</th>
<th>Contaminated wound</th>
<th>Dirty/Infected wound</th>
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<td>Description</td>
<td>Uninfected wound, no inflammation, no mucosa is entered eg. Breast surgery, hernia repair</td>
<td>No contamination by itself; Resp., GI, Genital or Urinary tract are entered; No evidence of infection eg. Gastrectomy</td>
<td>Open, fresh, accidental wounds; Gross spillage from the GI tract; But non-purulent inflammation eg. Appendicitis, Cholecystitis, PPU</td>
<td>Old traumatic with retained devitalised tissue and perforated viscera eg. Pus in acute appendicitis</td>
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<td>SURGEON CODE</td>
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<td>INFECTION RATE (%)</td>
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5 moments for hand hygiene

1. BEFORE TOUCHING A PATIENT
2. BEFORE CLEAN / ASEPTIC PROCEDURE
3. AFTER BODY FLUID EXPOSURE RISK
4. AFTER TOUCHING A PATIENT
5. AFTER TOUCHING PATIENT SURROUNDINGS

五個必須潔手的時刻

1. 直接接觸病人之前
2. 進行無菌操作或護理程序之前
3. 接觸血液或體液之後
4. 直接接觸病人之後
5. 接觸病人直接範圍之後

Sax, Allegranzi, Uckay, Larson, Boyce, Pittet
Journal Hosp Infection
2007
Hand Hygiene Prevents Infection

手部衛生防感染

Hand Hygiene Technique seven steps
Each step should be repeated at least 5 times

手部衛生技巧七部曲
每一個程序需要重覆至少五次

1. Palm to palm
手掌對手掌

2. Right palm over left dorsum with fingers interlaced and vice versa
右掌心在左手背上，手指交錯，交替清潔

3. Palm to palm with fingers interlaced
手掌對手掌，手指交錯

4. Rotational rubbing back of fingers to opposing palm with fingers interlocked
手指互扣，旋轉按摩指背及掌心

5. Rotational rubbing of right thumb clasped in left palm and vice versa
左手掌心旋轉按摩右手拇指，交替清潔

6. Rotational rubbing of finger tips to opposing palm and vice versa
指尖對掌心，旋轉按摩，交替清潔

7. Rotational rubbing of wrists by opposing palm and vice versa
掌心旋轉按摩手部，交替清潔

NTEC Infection Control Team (June, 2006)
Hand Hygiene

- Ward
  - 5 moments for Hand hygiene
  - 7 steps
  - Alcoholic hand rub / Soap and H2O
  - Continuous audit
  - Feedback
  - Name – based report

*Did You Wash Your Hands?*
Prevention of SSI – CQI project

- Antimicrobial Prophylaxis monitoring
- Surgical Hand scrub
- Ward base Hand Hygiene
- Blood glucose control program
- MRSA screening and decolonization
- Post operation wound chart
Thank you